Exhibit A

5   **Title:**   **Method and System for Canceling Setup**
                                                 Of a Packet-Based Real-Time Media Conference

     Inventor(s):   Pawan Chaturvedi and Tong Zhou

10   **Sprint Docket No.:**   2374

     MBHB Docket No.:   03-405

     Estimated Delivery Date of First Draft: **REDACTED**

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1.   Field of the Invention

The present invention relates to network communications and, more particularly, to setting up of conference sessions via a packet-switched network.

2.   Background

20   ### a.   Session Setup

In order to set up a packet-based real-time media conference via a conference server, an originating station will typically send a session invitation message to the conference server, which will cause the conference server to set up conference legs with the originating station and with one or more designated terminating stations. The server will then bridge together the conference legs, thereby allowing the stations to communicate with each other via the server.

25   In a typical arrangement, for instance, the conference server will respond to the invitation message from the originating station by itself sending an invitation message to a designated

1

terminating station. If the terminating station agrees to participate in the session, the terminating station will then send an agreement message to the conference server. And the conference server will then send an agreement message to the originating station.

In turn, the originating station will send an acknowledgement message to the conference server, completing setup of a conference leg between the originating station and the server. And the conference server will responsively send an acknowledgement message to the terminating station, completing setup of a conference leg between the conference server and the terminating station. The conference server may then bridge the conference legs together, to allow the stations to communicate.

The signaling messages that pass between the conference server and the various stations could comply with an accepted protocol, such as the well known Session Initiation Protocol (SIP) for instance. Under SIP, the invitation message could be a SIP "INVITE" message, the agreement message could be a SIP "200 OK" message and the acknowledgement message could be a SIP "ACK" message. SIP could be used to set up a real-time media conference, in which the conference legs comply with the well known Real-time Transport Protocol (RTP), or it could be used to set up another sort of conference.

b.   **Cancellation of Session Setup**

Once an originating station sends an invitation message to a conference server, the process of setting up the conference session has begun. In some cases, however, the originating station may wish to cancel setup of the session. For instance, if a user of the originating station changes his or her mind, the user might invoke a cancel or "end" function on the originating station, which may cause the originating station to send a cancellation message to the conference server. In SIP, the cancellation message would be a SIP "CANCEL" message.

2

Conventionally, a cancellation message functions to cancel a previous signaling request that has not yet been acted upon completely. For instance, if a first node has sent an invitation message to a second node and the second node has not yet sent an agreement message in response, the first node can send a cancellation message to the second node to cancel the invitation and end the session setup.

The inventors have discovered that a problem can arise when trying to cancel setup of a conference session, however. In particular, if the originating station has sent an invitation message to the server and has not yet received an agreement message in response from the server, the originating station may send a cancellation message to the server. In this scenario, however, it is possible that the server has already sent an invitation message to the terminating station and has already received an agreement message from the terminating station. Thus, if the server sends a cancellation message to the terminating station, the cancellation message would be ineffective because the terminating station has already responded to the invitation that it received from the server. The terminating station would simply ignore the cancellation message.

In this scenario, the terminating station would assume that a session is being set up and would likely alert a user of the new session. However, because the terminating station would ignore the cancellation message, the terminating station would not then alert the user that the session setup has been cancelled. At the same time, however, since the server had received a cancellation message from the originating station before the server sent an agreement message to the originating station, setup of a conference leg between the originating station and the server would in fact be cancelled. The end result could then be that the terminating station answers the call only to find that the caller has hung up. This situation is undesirable.

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3.   **Summary**

The present invention solves this problem. In particular, the invention applies in a scenario where (a) an originating station has sent an invitation message to a conference server seeking to set up a conference with at least one terminating station via the server and (b) the originating station sends a cancellation message to the conference server before setup of a conference leg between the conference server and the terminating station is complete.

As noted above, in this scenario, if the conference server just responsively sends a cancellation message to the terminating station, the terminating station may simply ignore the cancellation message if the terminating station has already responded to an invitation message from the conference server.

Instead, according to an exemplary embodiment of the invention, when the conference server receives the cancellation message from the originating station, the conference server (i) will complete setup of a conference leg with the terminating station and (ii) will then send a teardown message to the terminating station to tear down the conference leg with the terminating station. In SIP, the teardown message would be a SIP "BYE" message.

For instance, the exemplary embodiment can apply in a scenario where the conference server (a) receives a SIP INVITE message from the originating station, (b) responsively sends a SIP INVITE message to the terminating station, and (c) then receives a SIP CANCEL message from the originating station before a conference leg is completely set up between the conference server and the terminating station (i.e., at least before the conference server has sent a SIP ACK message to the terminating station in response to a SIP 200 OK message from the terminating station).

4

In that scenario, in response to the SIP CANCEL message, the conference server will first complete setup of a conference leg with the terminating station. To do so, if the conference server has not yet received a SIP 200 OK message from the terminating station, the conference server will first wait to receive the SIP 200 OK message from the terminating station. When the conference server has received a SIP 200 OK message from the terminating station, the conference server will then send a SIP ACK message to the terminating station (unconventionally without first waiting to receive a SIP ACK message from the originating station), thereby completing setup of the conference leg with the terminating station.

After completing setup of the conference leg with the terminating station, the conference server will then send a SIP BYE message to the terminating station, which will function to tear down the conference leg between the conference server and the terminating station. Conventionally, the terminating station will then respond to the SIP BYE message by sending SIP 200 OK message to the conference server.

Although the terminating station may have answered the call when it received the SIP INVITE message from the conference server, the terminating station may then alert a user that the call has ended when it receives the SIP BYE message. This improves the user experience at the terminating end.

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EXAMPLE PATENT CLAIMS

1.   A method of canceling setup of a conference between an originating station and a terminating station via a conference server in a scenario where (a) the conference server has received an invitation message from the originating station seeking to set up the conference with at least the terminating station and (b) the conference server then receives a cancellation message from the originating station before setup of a conference leg between the conference server and the terminating station is complete, the method comprising:

in response to the cancellation message, (i) completing setup of the conference leg between the conference server and the terminating station and (ii) then sending a teardown message from the conference server to the terminating station to tear down the conference leg between the conference server and the terminating station.

2.   The method of claim 1, wherein the conference server carries out the completing and sending functions.

3.   The method of claim 1, wherein the invitation message is a Session Initiation Protocol (SIP) INVITE message, the cancellation message is a SIP CANCEL message, and the teardown message is a SIP BYE message.

4.   The method of claim 1, wherein completing setup of the conference leg between the conference server and the terminating station comprises:

6

sending an acknowledgement message from the conference server to the terminating station.

5. The method of claim 4, wherein the acknowledgement message is a Session Initiation Protocol (SIP) ACK message.

6. The method of claim 1, wherein:

if the conference server has already received an agreement message from the terminating station agreeing to participate in the session, then completing setup of the conference leg between the conference server and the terminating station comprises sending an acknowledgement message from the conference server to the terminating station; and

if the conference server has not yet received the agreement message from the terminating station agreeing to participate in the session, then completing setup of the conference leg between the conference server and the terminating station comprises (i) the conference server receiving the agreement message from the terminating station and (ii) sending the acknowledgement message from the conference server to the terminating station.

7. The method of claim 6, wherein the invitation message is a Session Initiation Protocol (SIP) INVITE message, the agreement message is a SIP 200 OK message, and the acknowledgement message is a SIP ACK message.

8. The method of claim 1, wherein the conference leg is a Real-time Transport Protocol (RTP) session.

7

9.   A method comprising:

receiving a first invitation message from a first station, seeking to set up a conference session with a second station;

responsive to the first invitation message, sending a second invitation message to a second station, seeking to set up a conference leg with the second station;

receiving a cancellation message from the first station before completing setup of the conference leg with the second station; and

responsive to the cancellation message, (i) completing set up of the conference leg with the second station and (ii) sending a teardown message to the second station, seeking to tear down the conference leg with the second station.

10.   The method of claim 9, wherein:

the first invitation message is a Session Initiation Protocol (SIP) INVITE message;

the second invitation message is a SIP INVITE message;

the cancellation message is a SIP CANCEL message; and

the teardown message is a SIP BYE message.

11.   The method of claim 9, wherein the conference leg is a Real-time Transport Protocol (RTP) session.

12.   A conference server comprising:

a processor;

8

data storage;

cancellation logic stored in the data storage and executable by the processor in a scenario where (a) the conference server has received from an originating station an invitation message seeking to set up a conference with at least one terminating station via the conference server and (b) the conference server then receives a cancellation message from the originating station before setup of a conference leg between the conference server and the terminating station is complete,

wherein the cancellation logic causes the processor to (i) complete setup of the conference leg between the conference server and the terminating station and (ii) then send a teardown message to the terminating station to tear down the conference leg between the conference server and the terminating station.

13.   The conference server of claim 12, wherein

the invitation message is a Session Initiation Protocol (SIP) INVITE message;

the cancellation message is a SIP CANCEL message; and

the teardown message is a SIP BYE message.

14.   The conference server of claim 12, wherein the conference leg is a Real-time Transport Protocol (RTP) session.

15.   The conference server of claim 12, further comprising a network interface for communicating over a packet-switched network.

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Exhibit B

From:	Patel, Neil REDACTED
Sent:	
To:	'pchatu01@sprintspectrum.com'; 'tzhou01@sprintspectrum.com'
Cc:	Steven Funk (E-mail); 'sally.j.werts@mail.sprint.com'; Aaronson, Larry
Subject:	Patent Matter -- Sprint Docket No. 2374

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Dear Pawan and Tong:

    I am pleased to provide (for your review and comment) the attached draft patent
application directed to the invention docketed 2374.

    Each of you should carefully review the application to ensure that it accurately
describes and claims the invention. In this regard, please recall several important
requirements imposed by the U.S. Patent Laws. First, the claims must describe what is
believed to be the invention. While we seek to claim the invention as broadly as
possible, the claims must not be so broad as to cover what already exists. Second, the
description must describe the claimed invention sufficiently to enable one of ordinary
skill in the art to carry out the claimed invention without undue experimentation. Third,
the description must disclose the best way to carry out the invention as of the time we
file the application. If you should have additional information that we should include to
satisfy any of these requirements, please let me know.

    In addition, please recall that each of you will become obligated by a "duty of
disclosure" under the U.S. Patent Laws. The "duty of disclosure" will require submission
to the Patent Office of any and all information of which you are aware that a Patent
Examiner may consider to be material to patentability, whether alone or in combination
with other information. This duty continues to exist for as long as the patent application
is pending before the Patent Office, and failure to comply with the duty can render a
resulting patent unenforceable in federal court. Therefore, if you have any material
information, please provide it to me so that we can submit it to the Patent Office as
required.

    After you have had a chance to review this draft application, please call me at
(312) 913-2125 so that we may discuss your comments.

Very truly yours,
Neil Patel

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application.draft.doc

    [icon]

2474 Drawings.vsd

Exhibit C

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Re: New U.S. Patent Application
       Title: "Method and System for Canceling Setup of a Packet-Based Real-Time Media
          Conference Session"
       Inventors: Pawan Chaturvedi and Tong Zhou
       Sprint Reference No.: 2374
       Our Reference No. 03-405

Dear Pawan:

I am pleased to enclose for your review and signature a final patent application directed to
the above-referenced invention. Please have each inventor review the application to be
sure it accurately describes and claims your invention. In this regard, for instance, please
ensure that the application accurately sets forth the "best mode" currently known for
carrying out the claimed invention. In the event any one of the inventors needs to make any
minor changes, please do so, and initial the changes in the margin. If any one of the
inventors needs to make any substantial changes, please contact me.

Attached as the last page of the application is a Declaration and Power of Attorney. Please
have each inventor review the specification and then sign and date the Declaration. If any
information in the Declaration regarding an inventor is incorrect (e.g., a postal address),
please have the inventor make the correction in permanent ink and then initial and date the
correction (in addition to signing and dating these papers where indicated). Please return
the original signed application to me in the enclosed Federal Express envelope as soon as
possible for filing. I have also enclosed two extra copies of the application for you and
Tong to maintain for your records.

Also enclosed is an Assignment formally transferring rights in this invention and application to Sprint Spectrum L.P. Please have each inventor sign and date this Assignment, and have the inventor's signature witnessed by two parties who should sign as well. Then, return the signed Assignment to me together with the signed application.

We remind you that under the U.S. Patent Laws, each person associated with the filing and prosecution of a patent application (including inventors and attorneys) has a duty of candor and good faith in dealing with the Office, including disclosing to the Patent Office all information of which the person is aware that may be considered by an Examiner to be "material" to patentability. We enclose an information sheet regarding this Duty of Disclosure, which should be read by those involved in the filing and prosecution of the application. As described, please provide us with copies of all publications and other information known to the inventors, attorneys, or anyone else involved in preparation and prosecution of the application that may be material to patentability. We will then submit that information to the PTO in an Information Disclosure Statement.

I look forward to receiving the signed application papers. Should you have any questions or comments, please do not hesitate to contact me.

Very truly yours,

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NRP/rrs
Enclosures

c: Sally Werts (w/o enclosures)
       Steven J. Funk (w/o enclosures)
       Lawrence Aaronson (w/o enclosures)

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